

Executive Summary **March 2009 (February data)**

Server Software

Issue: zOS 1.7 is unsupported as of September 2008
Remediation: Upgrade to zOS 1.9
Next steps: Implementation planned for February/April 2009

Issue: MQ(5.3.1) is unsupported
Remediation: Upgrade to MQ version 6 (additional software costs)
Next Steps: Schedule upgrade

Issue: Software AG's Natural and Construct versions are past EOL.
Remediation: Upgrade Natural to 4.2.4 (Construct is used and updates controlled by MA21)
Next Steps: Implement #2808 Natural Upgrade

Issue: Software AG's ADABAS 7.4.4 is EOL.
Remediation: ADABAS V8 Upgrade
Next Step: Implement #2831 ADABAS V8 Upgrade

Issue: ITD has 1 NT 4.0 Server that is unsupported.
Remediation: Replace with an ODF solution
Next Steps: Schedule replacement

Issue: ITD has 65 Instances of Oracle 9i need to be upgraded or extended support.
Remediation: Upgrade to Oracle 10g
Next Steps: Schedule upgrade

Issue: ITD has 17 SQL Servers that have unsupported software when 9 servers lost support on September 30, 2007.
Remediation: Upgrade to SQL Server 2005
Next Steps: Complete project #2757 SQL2005 Migration

Server Utilization

ITD is benefiting from virtualization on the p590 and p6-p570s with AIX 5.3 LPARs.

The zVM/Linux z890 has been powered down.

The zOS z890 average CPU utilization is about **91%** during prime-time (including holidays).

All OpenView utilization data has to be manually extracted until OpenView Performance Insight is available.

About 400 servers still have to be added to HP Openview for CPU, Memory, Network, and Disk utilization.
Most servers will be added as part of the HP Openview project.

VMware's Virtual Center utilization data will be used on servers running on VMware hosts because OpenView data will be wrong.

Storage

ITD is in the process of upgrading the SAN to a Core-Edge design for increased scalability, manageability, and to increase available ports.
The Cisco Fabric Manager software and Cisco MDS-9513 firmware need to be updated.
SYMMs 0404, 0955, and 0975 are running 5670 microcode that is unsupported after January 31, 2009
A review of SAN bandwidth used needs to be done to prevent oversubscribing SAN ports

EMC Control Center has been upgraded to 6.1 that supports VMware guests.

3 More SYMMs (0404, 0955, 0975) went out of warranty in October. Now, 9 of the 14 EMC SYMM/CLARiiONs are out of warranty.
(EMC prices new technology cheaper than maintaining older technology and the warranty for any drives added ends with the box's warranty.)

Additional drives are planned for SYMM0419 to satisfy our additional storage needs.

ITD-Boston DR has been added to this report.

Other

The SAN migration is highlighting the need for a complete and accurate configuration database.

IPG has identified at least 135 U of additional rack space needed.

Operations needs to replace one of the large display screens

ITD Capacity Planning Report - Hardware Issues

Issues

The last File and Print Server (ANF-FP-003) that needed additional disk space was upgraded in March.

ITD Team	Platform	Type	Name	Capacity Issue	EOL	Date Warranty Expires	On Maintenance	Pending Upgrades	Critical Issues/Notes
	DELL File and Print Servers	Dell poweredge 6450	ANF-FP-003	Yes - Disk Space	Yes	Expired	YES	Done	New server is ready to go after HRCMS staff deletes unnecessary data.
		Dell 6400 to 6850	Anf-FP-004	None	Yes		YES	Done	Scheduled upgrade DELL Server 6850 Oct 6, 2006
		Dell 6400	ANF-CLS-0011	None	Yes	Expired	Yes	Done	Replaced with Dell server on 4/4/2007
		Dell 6850	ANF-FP-002	None	No	May-09	Yes	No	
		Dell 6650	GOV-FP-001	Yes - Disk Space	Yes	Expired	Yes	Done	Scheduled upgrade DELL Server 6850 Nov, 2006
	DELL Symantec Anti-Virus Server	Dell 2600	ANF-Netiq-001	Yes - Disk Space	Yes	Expired	Yes	Done	FY07
	DELL Windows Patch Management Server	Dell 6650	ANF-SMS-001	None	No	Jan-07	Yes	Yes	FY07 or FY08
	DELL Investment Brief Server	Dell 1600sc	ITD-9049	None	No	Expired	Yes	Yes	FY07 MASS.GOV will pay for upgrade
	DELL Domain Controller Chelsea	Dell 2850	ANF-INF-002	None	No	May-09	Yes	no	
		Dell 2850	msd-INF-001	None	No	May-06	Yes	No	
		Dell 2850	anf-msd-001	None	No	May-06	Yes	No	
		Dell 6850	ANF-INF-001	None	Yes	Expired	Yes	Done	Was decommissioned - Oct 2006
	DELL DHCP Servers	Dell GX 150	anf-APP-001	None	No	Expired	Yes	Done	Replacing with a robust PC
		Dell GX 150	GOV-app-001	None	No	Expired	Yes	Done	Replacing with a robust PC
	Database	Dell GX 270	Docket05	No	No	No	yes	yes	ODF Solution

Notes:

Mid June of FY09 we'll be doing a desktop refresh (3 year Lease) for 35 or 40 desktops and 15 laptops

ITD Capacity Planning Report - Software Issues

.0 and 17 SQL Servers that have unsupported software.

Natural and Construct version are past EOL. ADABAS (7.4.4) will be at EOL by the end of 2008.

upported starting September 2008.

upported

Oracle 9i need to be upgraded or may need extended support.

<u>Application</u>	<u>Platform</u>	<u>Number of Servers Affected</u>	<u>Name</u>	<u>Type</u>	<u>Version Installed</u>	<u>Installed Service Release</u>	<u>Current Service Release</u>	<u>Date Support Ends</u>	<u>Current Released Version</u>	<u>Pending Upgrades</u>	<u>Critical Issues/Notes</u>
	Intel - Dell	4	MS Windows	File / Print Symantec	2000	sp1	SP4	N/A	2000	2003	
	Intel - Dell	1	MS Windows	Management	2000	SP4	SP4	N/A	2000	2003	
	Intel - Dell	1	MS Windows	WSUS	2003	sp1	sp1	N/A	2003	None	
	Intel - Dell	1	MS Windows	Database	2000	SP4	SP4	N/A	2000	None	In touch with Mass GOV re: Upgrade
	Intel - Dell	3	MS Windows	Domain Controller	2003	SP1	SP1	N/A	2003	None	
	Intel - Dell	2	MS Windows	DHCP	2000	SP4	SP4	N/A	2000	2003	
	Intel - Dell	1	MS Windows	Database	NT 4.0	SP6a	SP6a	Expired	NT 4.0	ODF solution is in progress	No MS Support, No MS Patches available

	<u>Platform</u>	<u>Number of Servers Affected</u>	<u>Name</u>	<u>Type</u>	<u>Version Installed</u>	<u>Installed Service Release</u>	<u>Current Service Release</u>	<u>Date Support Ends</u>	<u>Current Released Version</u>	<u>Pending Upgrades</u>	<u>Critical Issues/Notes</u>
CIW-PROD-001	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	Sp4	sp4	9/30/2007	2005	N/A	
CIW-PROD-002	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	Sp4	sp4	9/30/2007	2005	N/A	
CIW-DEV-001	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	Sp4	sp4	9/30/2007	2005	N/A	
CIW-DEV-002	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	Sp4	sp4	9/30/2007	2005	N/A	
ES-CLS-DB-03A/B	INTEL	2	SQL Server Cluster	Database	Edition 2000 Enterprise	sp3	sp4	7/11/2006	2005	N/A	Node A is broken
ES-CLS-DB-01A/B	INTEL	2	SQL Server Cluster	Database	Edition 2000 Standard	Sp4	sp4	9/30/2007	2005	N/A	
CA-APP-ASSET-1	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	sp3	sp4	7/11/2006	2005		
CA-DEV-CB	INTEL	1	SQL Server	Database	Edition 2000 Enterprise	sp3	sp4	7/11/2006	2005		
CA-DEV-CLS-1A/B	INTEL	2	SQL Server Cluster	Database	Edition 2000 Enterprise	sp3	sp4	7/11/2006	2005		
CA-CLS-SQL-1A/B	INTEL	2	SQL Server Cluster	Database	Edition 2000 Enterprise	sp3	sp4	7/11/2006	2005		
ETL-PROD-DB	INTEL	1	SQL Server	Database	Edition 2000	Sp4	sp4	9/30/2007	2005		

ITD Capacity Planning Report - Software Issues

OSD-Training	INTEL	1	SQL Server	Database	Enterprise Edition 2000	Sp4	sp4	9/30/2007	2005		
STROHL-DB-001	INTEL	1	SQL Server	Database	Enterprise Edition 2000	Sp4	sp4	9/30/2007	2005		
Netezza01	Netezza	1	NZSQL	Database	3.0.1						
Netezza02	Netezza	1	NZSQL	Database	3.1(beta)						
NewMMARS	pSeries	3	AIX	OS	AIX 5.1			extended to May 2007	AIX 5.3	Done	CGI-AMS will now support AIX 5.3.

ITD Capacity Planning Report - Server Utilization

Server Platform	Applications	Average CPU Utilization						Average Memory Utilization				
		# Servers	DEC	JAN	FEB	8-5 M-F	Other	DEC	JAN	FEB	8-5 M-F	Other
AIX		8	4%	3%	4%	7%	3%	-	-	-	-	-
	NewMMARS	5	4%	3%	4%	5%	4%	-	-	-	-	-
	HR/CMS	3	3%	3%	3%	10%	1%	-	-	-	-	-
	EOHHS	-	-	-	-	-	-	-	-	-	-	-
	YSIS	-	-	-	-	-	-	-	-	-	-	-
HP-UX		18	13%	13%	14%	17%	12%	60%	61%	60%	63%	59%
	HHS	4	13%	12%	17%	25%	15%	60%	62%	65%	65%	64%
	Legato	2	23%	20%	17%	11%	18%	48%	49%	42%	42%	43%
	DMA	1	-	22%	23%	33%	20%	-	69%	69%	70%	69%
	DSS	2	11%	12%	12%	20%	9%	44%	46%	47%	61%	42%
	MMIS	3	9%	7%	6%	6%	6%	72%	82%	75%	75%	75%
	OpenView	2	8%	8%	10%	8%	10%	42%	42%	43%	43%	42%
	SIRS	4	16%	16%	14%	18%	13%	68%	63%	65%	72%	62%
Linux (Intel)		35	2%	1%	1%	2%	1%	37%	39%	40%	40%	40%
	MMIS	19	1%	1%	1%	1%	1%	48%	51%	53%	52%	53%
	VG	16	3%	2%	2%	3%	1%	25%	25%	25%	26%	25%
Windows		108	5%	5%	5%	6%	5%	21%	21%	22%	24%	22%
	CA		-	-	-	-	-	-	-	-	-	-
	DMA		-	-	-	-	-	-	-	-	-	-
	DMH MEDI	38	7%	7%	7%	8%	7%	25%	26%	26%	29%	25%
	DMR MEDI	39	4%	4%	4%	5%	3%	24%	24%	23%	25%	23%
	DPH MEDI	28	3%	4%	5%	5%	4%	11%	11%	11%	11%	11%
	MMIS	3	2%	2%	2%	2%	2%	23%	23%	20%	20%	20%
z/OS z890			71%	75%	79%	91%	70%					
	ITD		49%	51%	54%	57%	53%					
	RMV		21%	23%	23%	33%	16%					
	System OH		1%	1%	1%	1%	1%					

Servers to be added

<u>Server Platform</u>	<u>Applications</u>
Linux	MassGOV
Windows	CIW
	EMC-ECC
	EOHHS
	EPAY
	ETL
	ICANN
	Remedy
	SFED

Reporting Issues

NetIQ data is no longer available.

All OpenView data is manually extracted until Performance Insight is available

ITD Capacity Planning Report - Storage Utilization

ITD Storage Utilization							2/28/2009			
Physical Disk Configuration							Space Utilization (GB)			
EMC Storage Arrays	Array ID	Max Disks	Current # of Disks	Empty Slots	% Empty	End of Warranty	Total Usable	Used	Free	% Free
Data SYMMs	0404	576	576	0	0%	10/3/2008	43,052	40,789	2,263	5%
	0313	384	384	0	0%	8/14/2005	12,704	4,286	8,418	66%
	1823	384	384	0	0%	8/20/2005	17,086	14,537	2,549	15%
	0419	120	96	24	20%		11,065	10,819	246	2%
	3970	156	156	0	0%	2/14/2011	30,990	6,641	24,349	79%
Removing	0313						114,897	77,072	37,825	33%
	1823						-12,704	0	0	
							-17,086	0	0	
Data CLARiiON	2251	240	240	0	0%	5/4/2007				
	0007	480	340	140	29%		36,519	30,260	6,258	17%
							59,145	31,863	27,282	46%
Boot	3079	96	68	28	29%	2/16/2006	2,303	1,468	836	36%
	0955	144	102	42	29%	10/3/2008	3,436	2,209	1,227	36%
	0975	144	102	42	29%	10/3/2008	3,436	2,512	924	27%
NewMMIS										
SYMM	1192	288	228	60	21%	6/8/2008	14,422	13,616	806	6%
CLARiiON	1894		54				10,058	7,966	2,092	21%
EHS Oracle RAC										
CLARiiONs	1876						2,131	2,129	3	0%
	1877						2,265	2,129	136	6%
	1878						2,131	2,129	3	0%
Mainframe	2165	384	384	0	0%	2/16/2006				
Exchange	0651	390	290	100	26%	4/6/09 est.	9,634	7,597	2,037	21%
Boston DR	2580						14,395	7,299	7,096	49%

Notes:

Data SYMMs 0313 and 1823 are being replaced with an EMC DMX3-950 and CX3-80 for a net gain of about 51 TBs.

New EMC DMX4(SYMM3970) was implemented in April (using RAID5 3+1) plus additional drives are planned for SYMM0419 to handle needed storage capacity.

EMC DMX3(SYMM2580) in Boston DR is now included in the report.

Mainframe SYMM (2165) - z890 CPU cycles would be used in the 5 LPARs to create the input with EMC software. EMC seems to be eliminating/replacing their mainframe storage monitoring software. Replacement storage should have FICON connections.

IBM Storage (Shark) - was decommissioned with zVM z890.

Cisco Firmware for MDS6513s needs to be updated

EMC's ECC will need addition server(s) to handle increased storage

ITD Capacity Planning Report - Identified Storage Needs

When Storage Is Needed	Agency	Project	Project	Additional GBs Needed	Recently Allocated GBs	Estimated			Assigned		Comments	
						Additional SAN Ports	Core Ports	Edge Ports	Core Ports	Edge Ports		
Jun-2008	EHS	CO 45344	DMAPROD1,DMAPROD2,DMADEV		380	0	-	-				
	EHS		DMA		4,350	0	-	-				
	EHS		Mass Health - Production	8,000	0	-	-					
	EHS		Mass Health - Test,QA	8,000	0	-	-					
	EHS		SL8500 Tape Sub-System	0	7	7	-	7		LTO-4 Tape Drives		
	EHS		VG HHSProd2	100								
	EHS		Data Warehouse - Oracle RAC Prod		6,450	12	-	12	12	Edge ports for hosts		
	EHS		Data Warehouse - Oracle RAC QA		2,000	8	0	8	8	Clarion storage		
	EHS		Data Warehouse - Oracle RAC Dev		1,050	8	-	8	8	2 Hosts		
	EHS		Data Warehouse - Oracle RAC DSN			7		7				
	EHS		DW Integration NewMMIS	2,250						SYMM 1192		
	EHS		VG3			17	-	17	17	20- 3 delayed=17		
	EHS (DSS)		VG3				5	-	5	5	2 Additional (from 20 to 22)	
	EHS (DMA)		FamilyNet Replatforming	2,000		12	0	12			+ 3 (not needed 6/08)	
	EHS (DMA)	Informatica			18	0	18			3 SAN Ports/Server (3*4)		
		Informatica								Initial configuration		
		NewMMIS				20	-	20	20	6 unused HBA ports		
		Campaign Political Finance			100	5	-	5	5			
	OSC	MMARS			1,904	16	-	16	16			
	DPH	MEDITECH			2,300	35	-	35	35			
		HCSIS			0	256	4	-	4	4	4 Have been implemented	
	ITD	Netezza			0	4500	0	-	-			
	ITD	SL8500 Tape Sub-System			0		4	4	-	4	LTO-4 Tape Drives	
	ITD	Strohl QA			200		2	-	2			
		HR/CMS Upgrade			6,000							
	DPL	OASSIS 2651			96		5	0	5			
		SIRS Replatforming					17	0	17		Initial configuration	
		SIRS Replatforming									7 unused HBA ports	
	ITD	SQL2005 upgrade project (01,03 Clusters)			0	7,400	8	0	8		2 3850s @ 4 SAN ports each	
		SQL2005 upgrade project (Prod Phase 2)			?		16	0	16		IBM Blade Center with 4 HS21s	
		SQL2005 upgrade project (Dev Phase 2)			?		6	0	6		2 3850s @ 3 SAN ports each & local harc	
		GSM - SQL server 2005 database			4							
		ESX Hosts - Prod Phase 1			2,000		20	0	20	0	20	10 HP DL380s G5 @ 2 SAN ports each
		ESX Hosts - Prod Phase 2			?		16	0	16			8 HP DL380s G5 @ 2 SAN ports each
		ESX Hosts - Dev Phase 1			?		6	0	6			3 HP DL380s G5 @ 2 SAN ports each
	ITD	zVM Replatform (P590)					4	-	4		4	
	ITD	zVM Replatform - Phase II - Intel Linux					8	-	8		8	
	ITD	EMC DMX3-950			0		8	8	-	7		2nd half
	ITD	EMC CX3			0		0	0	-			8 Have been implemented
	ITD	EMC DMX4			0		16	16	-		14	
	ITD	3 EMC Clarion CX3-40Fs for EHS			0		12	12	-		12	Dedicated storage
	ITD	Oracle Support Platform										See zVM Replatform - Phase II - Intel Lir
	ITD	Remove SYMM 1823 and 0313			0							Recycle SAN ports
		HR/CMS										Gives back ~x TB after upgrade
	ITD	SQL2005 upgrade project										Gives back ~7 TB after upgrade
					28,650 GB		322	47	275	44	162	
				or								
				28.65 TB			44	162	Assigned			

116 3 113 Required SAN ports that need to be assigned(?)
(IPG is working with Data Management to identify ports assigned.)

Note: These are only the identified additional storage needs

A formula is being worked out for estimating additional tape drive(s) and tape media needs from the estimated additional storage needed

A process for tracking storage estimates through allocation is being developed.

A review of SAN bandwidth used needs to be done to prevent oversubscribing SAN ports

ITD Capacity Planning Report - Rack Space Needs

<u>Estimated Date Needed</u>	<u>Quantity</u>	<u>U Size</u>	<u>Description</u>	<u>Additional U's Rackspace</u>	<u>U's Rackspace Recently Allocated</u>	<u>Project</u>	<u>Comments</u>
	6	4	IBM x3850M2s	24		SIRS	2 Prod DB, 2 Prod APP, 1 Test DB, and 1 Test APP
	2	6	Cisco 6506	12		SIRS	
	2	4	IBM x3850M2s	8		DSS FamilyNet off SuperDome	Production
	2	2	IBM x3650	4		DSS FamilyNet off SuperDome	Test/Dev
	6	4	IBM x3850M2s	24		DMA Informatica	2 Prod DB, 2 Test, and 1 Dev
	7	4	IBM x3850M2s	0	28	VG3	
	3	3	IBM x3950	0	9	VG3	
	2	9	IBM H Blade Chassis	0	18	VG3	
	2	4	IBM x3850M2s	0	8	HCQCC	
	2	4	IBM x3850M2s	0	8	zVM Replatform	Phase II/future Shared Database Servers
	4	4	IBM x3850M2s	16		#2757 SQL2005	plus (2 3ru 3850s= 6U will be changing racks)
	2	3	Switches	6		#2757 SQL2005	Heartbeat switches

Box count = 40 U of rack space needed 94 71

Notes:
IPG estimates they will need at least 3 racks of space in FY09.